CHAPTER 2

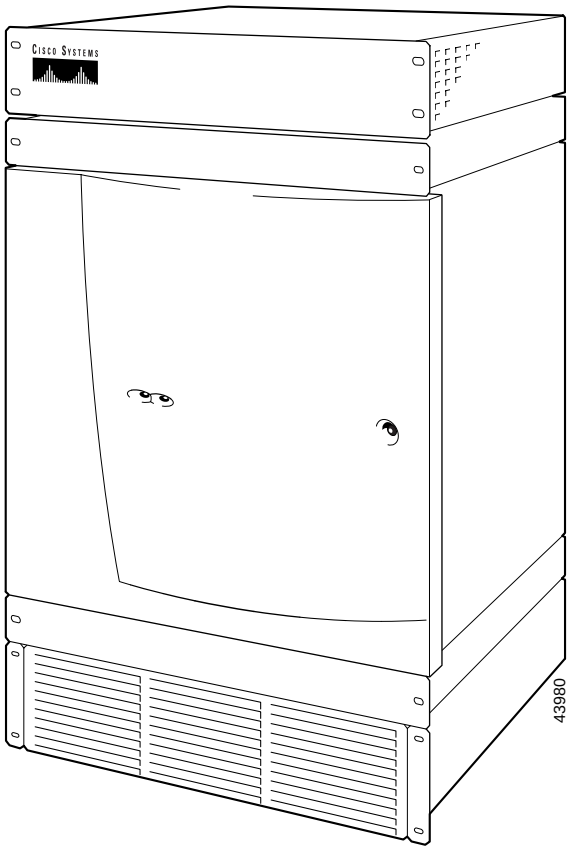
Product Overview

This chapter provides an overview of the Cisco MGX 8950 switch. It describes the physical characteristics, key features, and functionality of the switch.

The MGX 8950 is a high capacity ATM backbone switch that holds up to 12 ATM service module cards, two processor module cards (PXM45/Bs) and four switching module cards (XM-60s). The switch can be mounted in either a 19-inch or a 23-inch rack with industry standard EIA/Retma mounting hole patterns. The system can accept power from either a –48 VDC (–42 + –56 VDC) DC source or an optional 220 VAC (180–254 VAC) source.

The DC-powered version of the switch is shown in Figure 2-1.

Figure 2-1 MGX 8950 Switch (DC version)



MGX 8950 Chassis and Power

The MGX 8950 chassis is a high capacity ATM backbone switch that can hold up to twelve ATM service modules, two Processor Modules (PXM45/Bs) and four Switching Modules (XM-60s). The switch can be mounted in either a 19-inch or a 23-inch rack with industry standard EIA/Retma mounting hole patterns. The system can accept power from either a –48 VDC (–42 + –56 VDC) DC source or an optional 220 VAC (180–254 VAC) source.

MGX 8950 Backplane

The MGX 8950 backplane provides up to 240 Gbps of switching capacity, using four dedicated switch modules (XM-60s), each containing 60 Gbps of cross-bar switching fabric.

APS Assembly (Optional)

An optional feature for the MGX 8950 is the Automatic Protection Switching (APS) assembly. The APS assembly consists of two optical AXSM back cards, an active card and a standby card, which are connected using an APS connector (Part No. MGX-APS-CON-8950). The APS assembly can then be installed in the card cage. See Chapter 4, “Enclosure and Card Installation,” for installation procedures.

APS provides 1+1 and 1:1 redundancy protection. For information on APS configuration, refer to *Cisco MGX 8850 and MGX 8950 Switch Software Configuration Guide, Release 2.1*

An APS connector is needed for OC48 capacity AXSM cards (AXSM-1-2488/B). It is not needed for OC192 capacity AXSM cards.

MGX 8950 Card Sets

The MGX 8950 switch supports two types of card sets: the *core cards* and *service modules*. The Processor Module (PXM45/B) and the Switching Module (XM-60s) are the *core modules*.

The *service modules* provide either ATM trunking or an ATM UNI interface. The AXSMs have serial link connections to the XM-60 switch modules, providing a data rate of up to 2.488Gbps per modules.

The MGX 8950 switch receives network clocking from the PXM-UI-S3 card. The clock distribution logic in the modules of the MGX 8950 nulls any trace and buffer delays, which ensures that all cards have their clocks in sync and in phase. The two PXM45/B back cards are the PXM-UI-S3 (user interface, network clocking) in the upper shelf, and the PXM-HD (hard drive) in the lower shelf.

The switch fabric of the MGX 8950 switch consists of four single height switch cards (XM-60s), which reside in slots 9, 10, 25, and 26 of the MGX 8950 chassis. All four XM-60’s should be installed to provide scalable bandwidth sharing. Each XM-60 provides 60 Gbps of cross point switching. The XM-60 card contains four switch ASICs, and each XM-60 has four serial links to each AXSM slot (one serial link per switch ASIC). The upper two XM60s have one serial link to each PXM slot. The switch scheduling hardware optimizes switching throughput by adjusting to various traffic flows. A single point of failure in the switch fabric does not block traffic flow in a system with multiple switch modules. During normal operations, all installed XM-60 switch modules can participate in cell switching to enable maximum hardware usage and reliability. The XM-60s do not have corresponding back cards.

Note Cisco Systems recommends you use all four XM-60 modules for full redundancy.

A card set consists of a front card with its attached daughter card and one or two back cards (or line cards). The front card contains the processing intelligence and, on the daughter card, the firmware that distinguishes the interface (OC-48, OC-12, OC-3, T3, E3, and so on). The back cards on the AXSM simply provide the electrical or optical interface for one or more lines of a particular type. See Table 2-1 for a list of front and back cards.

Note The daughter card is not a field-replaceable module, so this manual does not describe it.

Table 2-1 MGX 8950 Front and Back Cards

Card	Description
Switch Module (XM-60)	Provides 60 Gbps of switching capability each and provides up to 240 Gbps of switching capacity (using four XM-60s).
Processor Switching Module (PXM45/B)	Front card controlling the switch and supporting external interfaces for user-access. The back cards consist of a user interface card (PXM-UI-S3) and the hard drive card (PXM-HD).
Processor Switching Module User Interface (PXM-UI-S3)	Contains various types of user interface ports to let you access and control the switch. Provides Stratum 3 network clocking.
Processor Switching Module Hard Drive (PXM-HD)	Houses the disk drive containing all switch and network-related information.
ATM Switch Service Module (MGX-AXSM-1-2488/B)	Double-height, dual-role card that serves as a trunk, and provides 1 OC-48 or STM-16,1 line at 2488 Mbps.
ATM Switch Service Module (MGX-AXSM-16-155/B)	Double-height, dual-role card that serves as a trunk or a UNI, and provides 16 OC-3c or STM-1, 16 lines at 155 Mbps.
ATM Switch Service Module (MGX-AXSM-4-622/B)	Double-height, dual-role card that serves as a trunk or a UNI, and provides 4 OC-12c or STM-4, 4 lines at 622 Mbps.
ATM Switch Service Module (MGX-AXSM-16-T3E3/B)	Double-height, dual-role card that serves as a trunk or a UNI, and provides 16 T3 or E3 lines.
Service Network Module (MGX-SMFIR-2-622/B MGX-SMFLR-2-622/B)	The MGX-SMFIR-2-622/B is an intermediate-range module for the AXSM and provides a SONET/SDH OC12/STM4 ATM interface at 622 Mbps with SC connectors. The MGX-SMFLR-2-622/B is a broadband network long-range module for the AXSM and provides a SONET OC12/STM4 ATM interface at 622 Mbps with an SC connectors.
Service Network Module (MGX-MMF-8-155-MT/B, MGX-SMFIR-8-155-LC/B, and MGX-SMFLR-8-155-LC/B)	The MGX-MMF-8-155-MT/B is a short-range, multi-mode fiber module for the AXSM providing 8 SONET/SDH OC3/STM1 ATM interfaces at 155 Mbps, and has MTRJ connectors. The MGX-SMFIR-8-155-LC/B is an intermediate-range, single-mode fiber module for the AXSM providing 8 SONET/SDH OC3/STM1 ATM interfaces at 155 Mbps, and has an LC connector. The MGX-SMFLR-8-155-LC/B is a long-range, single-mode fiber module for the AXSM providing 8 SONET/SDH OC3/STM1 ATM interfaces at 155 Mbps, and has LC connectors.

Table 2-1 MGX 8950 Front and Back Cards (continued)

Card	Description
MGX-SMFSR-1-2488/B, MGX-SMFLR-1- 2488/, and MGX-SMFXLR-1-2488/B	The MGX-SMFSR-1-2488/B is a short-range, single-height back card with 1 OC-48c or STM-16 and SC connectors. The MGX-SMFLR-1-2488/B is a long-range, single-height back card with 1 OC-48c or STM-16c and SC connectors. The MGX-SMFXLR-1-2488/B is an extended long-range, single-height back card with 1 OC-48c or STM-16c.
MGX-SMB-8-T3 MGX-SMB-8-E3	The MGX-SMB-8-T3 is an eight-port, T3 single-height back card with SMB connectors. The MGX-SMB-8-E3 is an eight-port, E3 single-height back card with SMB connectors.